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ABSTRACT

Hypothesis generation and testing is outlined as an additional domain for program evaluators. Program evaluation involves a thorough analysis of the processes that contribute to change (or a lack of change) among program recipients. This process of change is analyzed in two ways: (1) treating programs as naturally occurring field studies; and (2) using a theoretical perspective to guide the evaluation. This paper examines the ways in which these two methods can be applied (and the benefits resulting from such application) drawing examples from an evaluation of a private sector group awareness training program. A model to conceptualize change hypothesizes that much behavior change is a function of (1) predisposing variables (e.g. readiness for change, stress factors, extent to which one's social network is supportive of change); (2) process variables (e.g. program participation, commitment, cognitive restructuring of past events); and (3) maintenance variables (e.g. extent to which change is consistent with one's self-concept, one's attributions for change). The use of a guiding theoretical perspective and structural equation modeling, in addition to the treatment of programs as naturally occurring experiments, enables evaluators to continue to make contributions to issues concerning program effectiveness. (PN)

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Program Evaluation and the Generation and Testing of Hypotheses

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Abstract

Program evaluators have necessarily been concerned with answering questions concerning program effectiveness. An intriguing and important next step in evaluation is an examination of how programs work. This involves a thorough analysis of the processes that contribute to change (or a lack thereof) among program recipients. We believe that the process of change can be analysed in two ways: treating programs as naturally occurring field studies and using a theoretical perspective to guide the evaluation. This paper examines the ways in which these two methods can be applied (and the benefits resulting from such application) using our evaluation of a private sector group awareness training program as an example.

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Program evaluation is a complex, multifaceted undertaking that involves determining the degree to which program recipients are assisted, where social programs should be initiated, and how they should be implemented (Judd & Kenny, 1981; Posavac & Carey, 1985; Weiss, 1972). However, it is important to recognize that the contribution made by program evaluators need not stop with answering these questions. Wortman (1975) has suggested that the answer to the question: "does the program work?" requires an analysis of the ways in which the program is administered. A significant and intriguing next question might be: how does it work?

This would involve a thorough analysis of the processes that contribute to change (or lack thereof) among program recipients. Since most social programs are multifaceted, it is insufficient to examine the results of outcome measures and infer program effectiveness as a whole. Without an analysis of process, it is not possible to determine which aspects of the program are producing desirable or undesirable effects, and which result in unintended or no effects.

An analysis of process may even result in justified questioning of the purpose of the program as it currently exists. A program can be effective in meeting its goals without producing positive outcomes in participants. Wortman (1975) reviewed a study by Fletcher (1973) which examined the effectiveness of emergency room follow-up clerks in encouraging patients to return for treatment. Analyses revealed that the presence of follow-up clerks resulted in more hospital treatments than in the control group, but there were no differences in health status. Objectively, this program was successful in meeting its goals. However, improvement in health did not

result from increased health care.

Despite its apparent success, this program could have benefitted from an analysis of process. If why patients did or did not follow medical regimen prescribed during hospital visits were addressed, the question of how improved health can result from receiving health services could have been broached (Wortman,1975). Such an analysis could provide an understanding of how the follow-up clerk was successful in encouraging people to return for treatment. Were the clerks effective because they made an appeal to fear (e.g. suggested the consequences of not receiving treatment) or simply because they provided relevant information (e.g. where to park at the hospital, who they should see, how long it would take)? Identifying the most effective appeal could yield a more effective program or result in program discontinuation if incorporated into the structure that existed prior to introducing follow-up clerks.

Examining the process through which change occurs can accomplish several things: it can explain how programs work, provide meaningful insights on what program modifications need to occur, and generate hypotheses which can be tested, ultimately contributing to psychological theory. Such an approach can also suggest psychological variables--previously explored mainly in the laboratory--which can have an impact in the "real world".

A distinction can be made between programs which are more or less amenable to the type of approach we are advocating. Clearly, the rationale, content, and goals of some programs lend them more readily to a psychological analysis than others.

The success of our approach also depends, in part, upon the training of the individual evaluators. Particularly in programs designed to produce psychological change among recipients, knowledge of theory in social, clinical, and/or community psychology would be beneficial. This could assist evaluators in identifying program elements which might produce both desirable and undesirable effects.

The application of social comparison theory (Festinger, 1954) to evaluating tutoring programs (cf. Allen, 1976,1983; Nadler & Fisher, in press) may prove illustrative. Social comparison theory states the most psychologically relevant comparisons are with similar others. When the result of such a comparison is favorable, people are especially pleased, but negative comparisons with social comparison others can be especially threatening (Fisher & Nadler,1974). A major feature of peer tutoring is that the helper is more similar to the recipient than in the traditional teacher-student relationship, since both come from the same class or age group. This suggests that peer tutoring has potential to threaten the self-concept of the recipient, though it should be self-esteem enhancing for the donor. These are important outcomes to examine in an evaluation. In addition to their practical significance (e.g. that peer tutoring can hurt the one it is designed to help and help the donor as an unintended by product), they also provide a field test of a major theory. Work on attribution theory (Jones & Davis, 1965; Kelley, 1967) can also suggest a moderator of the negative effects on the tutee. If the tutee perceives the tutor as having acquired his or her skills through the use of resources not yet available to the tutee, hope for the tutee's future success is instilled. However, if the tutor's success is attributed simply to greater ability, the inter-

action may engender helplessness. Thus, the use of social psychological theory can help to identify a program variable capable of producing desirable and undesirable effects.

We do not wish to imply that the question of process can be addressed easily. Two ways it can be studied include: treating programs as naturally occurring field studies, and using a theoretical perspective coupled with structural equation modeling to guide the evaluation. The remainder of this paper will examine how these two methods can be utilized, drawing examples largely from our study of a private sector large group awareness training program known as the Forum, successor to the program known as est (Fisher & Chinsky, 1984).

The goal of the Forum is to assist participants in improving the quality of their lives. Participants attend sessions for two consecutive weekends. The setting is a large room where one hundred to two hundred people listen to and interact with the Forum leader. Throughout, participants must adhere to a number of rules, including: not leaving the room except during breaks, standing when they talk, refraining from speech unless it is directed to the Forum leader, and abstaining from the use of alcohol until the Forum is complete.

We are examining the impact of Forum participation on mental, physical and social functioning. We also think it is important to examine the processes through which this change occurs, and we have articulated a loose model to conceptualize change in the context of the Forum and perhaps in many other settings as well (Fisher,1985). Specifically, we hypothesize that much behavior change is a function of predisposing variables (e.g.

readiness for change, stress factors, extent to which one's social network is supportive of change), process variables (e.g. program participation, commitment, cognitive restructuring of past events), and maintenance variables (e.g. extent to which change is consistent with one's self-concept, one's attributions for change).

With respect to the use of theoretical perspective, we believe that in general, program evaluations are not atheoretical. Rather, there are many program evaluations where conceptual orientations are used either implicitly or explicitly. The explicit use of a theoretical orientation in applied settings allows for the testing of theory to occur and the assumptions and values of researcher to be stated and directly examined (Rappaport, 1977).

While it may be argued that adopting a theoretical perspective biases and restricts the study of outcome and the process of change, we believe the advantages outweigh the risks. The acceptance of a theoretical framework provides several advantages. First, theory assists in developing a coherent picture of the process and might suggest variables not considered by atheoretical observation. For example. in approaching the Forum from the perspective of a stress researcher, one would be cognizant that the particular stressor people experience is not most important, but rather their perception of its stressfulness. This might lead to the hypothesis that Forum participation alters how people appraise both past and present stressors (e.g. past stressful events might come to be perceived as less negative following participation).

Additionally, depending upon outcome, it might be be possible to design interventions which simultaneously test theories and suggest more efficient ways for the program to operate. For example, if cognitive restructuring of the past is revealed as an important outcome, it might by possible to suggest more effective ways in which such cognitive restructuring can be accomplished within the program. This would result not only in a stronger program, but also in a more experimental test of the hypothesis that cognitive restructuring can ameliorate stress.

A persistent dilemma confronted by evaluators interested in examining the change process involves the difficult choice of which variables to assess. It is useful for the evaluator to have hypotheses as to which might be most related to change among recipients, since it is an ominous task to analyze all of the process variables involved. As illustrated in the example above, one way to increase an understanding of how a program works is to introduce a theoretical perspective into the evaluation. This approach can be used to direct the choice of variables.

A second advantage of this approach is gained when the theoretical framework is coupled with appropriate structural equation modeling. In this way, the contribution of several variables to the process of change can be assessed (Kenny, 1985), as well as the overall consistency of the data with the model proposed. This can be exemplified with a further illustration from our work on the Forum. From our conceptualization of change, we believe several variables will be important to the charge process. These were listed earlier, (e.g. level of stress, readiness for change, reconstruction of the past). Each could be entered into the equa-

tion as predisposing, mediating or outcome variables and their significance to the change process evaluated. This would provide information concerning how much variance each variable can explain in change among participants while simultaneously providing a test of our model.

With this approach, disconfirmation of the model or portions of it may lead to alterations in the theoretical perspective. For instance, we may have a structural equation that hypothesizes both a direct path between the treatment (e.g. the Forum) and a post-Forum reduction in stress, and a path in which reduced stress does not result directly from the Forum, but rather is mediated by social support. The resulting non-significant direct effect, in addition to the significant mediated effect, illuminates the direction the theory should take regarding the process through which the Forum impacts people's lives. Such findings would be illustrative of the importance of social support to the process of change.

Despite the risks involved in such post hoc adjustments (e.g. the respecification of the model is based upon what is already known; therefore the fit between the model and the data is artificially increased--see Kenny 1979-- for a review of additional risks) the structure of the theoretical-statistical framework provides valuable direction for the evaluators. As Kenny (1979) has noted, the key is beginning with a theoretical framework. For a full elaboration of the advantages derived from this theoretical-statistical approach see Kenny (1985)and for an introduction and explanation of these techniques see Bentler (1980); Kenny (1979) and Reis (1982).

The final advantage of this approach concerns the contribution it makes to the reporting of data. Since a theoretical perspective has guided the

choice of the outcome variables being considered and the structural models employed, the biases of the researchers form a clear background against which the results can be evaluated. An increased understanding of the findings and the inherent weaknesses of the research result when both implicit theories and hypotheses are made explicit.

To conclude, this paper has outlined an additional domain for program evaluators, that of hypothesis generation and hypothesis testing. The use of a guiding theoretical perspective and structural equation modeling, in addition to the treatment of programs as naturally occurring experiments, enables evaluators to continue to make contributions not only to issues concerning program effectiveness. The formulation and testing of hypotheses of conceptual interest to psychology as a whole can be made as well.

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